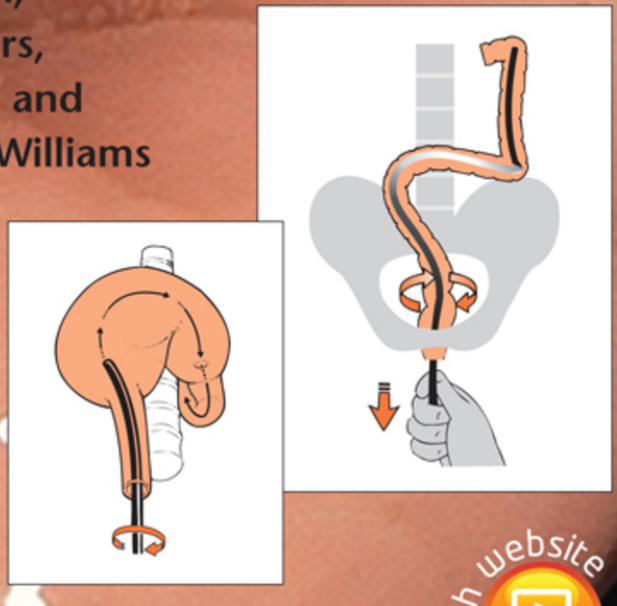
COTTON AND WILLIAMS'

Practical Gastrointestinal Endoscopy

The Fundamentals

SEVENTH EDITION

Adam Haycock,
Jonathan Cohen,
Brian P. Saunders,
Peter B. Cotton and
Christopher B. Williams



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Preface to the Seventh Edition

Gastrointestinal endoscopy continues to evolve and has seen a steady increase in demand, complexity, and innovation in what it is possible to do with an endoscope. It is now the undoubted investigation of choice for the GI tract, although there is no room for complacency. Parallel improvements in imaging capabilities such as MRCP and CT colonography are now impacting on the "diagnostic" endoscopy workload, and much of the current emphasis is on advancing endoluminal, transluminal, and hybrid therapeutic techniques.

The ongoing adoption of national bowel cancer screening programs has driven up standards for endoscopists across the board. Increasing recognition of the importance of identifying even small, subtle premalignant dysplastic lesions and the ability to provide complex therapeutic intervention in both the upper and lower GI tract has made the learning process even more lengthy and difficult for those new to the field. Accordingly, the "fundamentals" no longer refers solely to basic or simple procedures, if indeed it ever did. In this era of increasing complexity of endoscopy and increasing attention to quality performance, the fundamental skills that constitute the foundation of all endoscopic practice have never been more important to master.

In line with the last edition, we have limited this book to the most common diagnostic and therapeutic "upper" and "lower" GI procedures, reserving more advanced techniques such as ERCP and EUS for others to cover. What is new to this edition is acknowledgement of the enormous impact of the Internet and electronic "e-learning." This edition is supported by a selection of online multimedia images and clips, which are signposted in the text and referenced at the end of each chapter. To allow for greater use of mobile platforms, each chapter has been reconfigured into a more easily digestible "bite-sized" chunk with its own key learning points and searchable keywords. Multiple-choice questions (MCQs) are also available online to allow self-assessment and consolidate learning.

We also formally acknowledge with this edition what has been common parlance for years—that this book is "Cotton and Williams'" fundamentals of gastrointestinal endoscopy, sharing personal opinions, tips, and tricks gained over many years. Although this is the last edition in which these two pioneering authors will actively participate, this textbook will remain a practical guide squarely based on their practice and principles. It has been our privilege to work with them to produce this edition, and we are honored to have been asked to sustain this important effort in the future.

Practical Gastrointestinal Endoscopy: The Fundamentals aims to complement rather than replace more evidence-based recommenda-

tions and guidelines produced by national societies. It remains focused on helping those in the first few years of experience to move more quickly up the learning curve toward competency. We hope that it will inspire trainees to attain the levels of excellence represented by those individuals from whom the book takes its name.

Adam Haycock
Jonathan Cohen
Brian P Saunders

Preface to the First Edition

This book is concerned with endoscopic techniques and says little about their clinical relevance. It does so unashamedly because no comparable manual was available at the time of its conception and because the explosive growth of endoscopy has far outstripped facilities for individual training in endoscopic technique. For the same reason we have made no mention of rigid endoscopes (oesophagoscopes, sigmoidoscopes and laparoscopes) which rightly remain popular tools in gastroenterology, nor have we discussed the great potential of the flexible endoscope in gastrointestinal research.

Our concentration on techniques should not be taken to denote a lack of interest in results and real indications. As gastroenterologists we believe that procedures can only be useful if they improve our clinical management; clever techniques are not indicated simply because they are possible, and some endoscopic procedures will become obsolete with improvements in less invasive methods. Indeed we are moving into a self-critical phase in which the main interest in gastrointestinal endoscopy is in the assessment of its real role and cost-effectiveness.

Gastrointestinal endoscopy should be only one of the tools of specialists trained in gastrointestinal disease—whether they are primarily physicians, surgeons or radiologists. Only with broad training and knowledge is it possible to place obscure endoscopic findings in their relevant clinical perspective, to make realistic judgements in the selection of complex investigations from different disciplines, and to balance the benefits and risks of new therapeutic applications. Some specialists will become more expert and committed than others, but we do not favour the widespread development of pure endoscopists or of endoscopy as a subspecialty.

Skilful endoscopy can often provide a definitive diagnosis and lead quickly to correct management, which may save patients from months or years of unnecessary illness or anxiety. We hope that this little book may help to make that process easier and safer.

April 1979
P.B.C., C.B.W.

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The authors are grateful to the dedicated collaborators who have embellished or enabled the production of this book.

The skills of Steve Preston (steveprestonmultimedia@gmail.com) produced the web videos and imagery. The artistry and great patience of David Gardner (davidgardner@cytanet.com.cy) has allowed upgrading of the drawings and figures in this edition and several previous ones. At Wiley publishers, the guidance of Oliver Walter, backed by Rebecca Huxley's formidable editorial talents, has made the production process almost enjoyable.

The authors also wish to register indebtedness to their respective life-partners (Cori, Sarah, Annie, Marion and Christina) for their unending support—despite intrusions into personal and family time.

About the Companion Website

This book is accompanied by a website:

www.wiley.com/go/cottonwilliams/practicalgastroenterology

The website includes:

- 37 videos showing procedures described in the book
- All videos are referenced in the text where you see this logo 
- A clinical photo imagebank, consisting of an equivalent clinical photo for selected line illustrations
- An interactive "check your understanding" question bank (MCQs) to test main learning points in each chapter

CHAPTER 1

The Endoscopy Unit, Staff, and Management

Most endoscopists, and especially beginners, focus on the individual procedures and have little appreciation of the extensive infrastructure that is now necessary for efficient and safe activity. From humble beginnings in adapted single rooms, most of us are lucky enough now to work in large units with multiple procedure rooms full of complex electronic equipment, with additional space dedicated to preparation, recovery, and reporting.

Endoscopy is a team activity, requiring the collaborative talents of many people with different backgrounds and training. It is difficult to overstate the importance of appropriate facilities and adequate professional support staff, to maintain patient comfort and safety, and to optimize clinical outcomes.

Endoscopy procedures can be performed almost anywhere when necessary (e.g. in an intensive care unit), but the vast majority take place in purpose-designed "endoscopy units."

Endoscopy units

Details of endoscopy unit design are beyond the scope of this book, but certain principles should be stated.

There are two types of unit. Private clinics (called ambulatory surgical centers in the USA) deal mainly with healthy (or relatively healthy) outpatients, and should resemble cheerful modern dental suites. Hospital units have to provide a safe environment for managing sick inpatients, and also more complex procedures with a therapeutic focus, such as endoscopic retrograde cholangiopancreatography (ERCP). The more sophisticated units resemble operating suites. Units that serve both functions should be designed to separate the patient flows as far as possible.

The modern unit has areas designed for many different functions. Like a hotel or an airport (or a Victorian household), the endoscopy unit should have a smart public face ("upstairs"), and a more functional back hall ("downstairs"). From the patient's perspective, the suite consists of areas devoted to reception, preparation, procedure, recovery, and discharge. Supporting these activities are many other "back hall" functions, which include scheduling, cleaning, preparation, maintenance and storage of equipment, reporting and archiving, and staff management.

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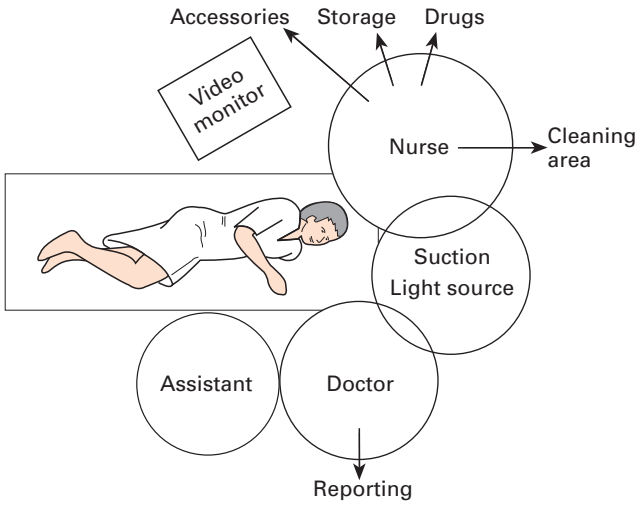

Fig 1.1 Functional planning—spheres of activity.

Procedure rooms

The rooms used for endoscopy procedures should:

- ***not be cluttered or intimidating***. Most patients are not sedated when they enter, so it is better for the room to resemble a modern dental office, or kitchen, rather than an operating room.
- ***be large enough*** to allow a patient stretcher/trolley to be rotated on its axis, and to accommodate all of the equipment and staff (and any emergency team), but also compact enough for efficient function.
- ***be laid out with function in mind***, keeping nursing and doctor spheres of activity separate (Fig 1.1), and minimizing exposed trailing electrical cables and pipes (best by ceiling-mounted beams).

Each room should have:

- ***piped oxygen and suction*** (two lines);
- ***lighting planned*** to illuminate nursing activities but not dazzle the patient or endoscopist;
- ***video monitors placed conveniently*** for the endoscopist and assistants, but also allowing the patient to view, if wished;
- ***adequate counter space*** for accessories, with a large sink or receptacle for dirty equipment;
- ***storage space for equipment required on a daily basis***;
- ***systems of communication*** with the charge nurse desk, and emergency call;
- ***disposal systems*** for hazardous materials.

Patient preparation and recovery areas

Patients need a private place for initial preparation (undressing, safety checks, intravenous (IV) access), and a similar place in which to recover from any sedation or anesthesia. In some units these functions are separate, but can be combined to maximize flexibility. Many units have simple curtained bays, but rooms with solid side

walls and a movable front curtain are preferable. They should be large enough to accommodate at least two people other than the patient on the stretcher, and all of the necessary monitoring equipment.

The "prep-recovery bays" should be adjacent to a central nursing workstation. Like the bridge of a ship, it is where the nurse captain of the day controls and steers the whole operation, and from which recovering patients can be monitored.

All units should have at least one completely private room for sensitive interviews/consultations before and after procedures.

Equipment management and storage

There must be designated areas for endoscope and accessory reprocessing, and storage of medications and all equipment, including an emergency resuscitation cart. Many units also have fully equipped mobile carts to travel to other sites when needed.

Staff

Specially trained endoscopy assistants have many important functions. They:

- ***prepare patients*** for their procedures, physically and mentally;
- ***set up*** all necessary equipment;
- ***assist*** endoscopists during procedures;
- ***monitor*** patients' safety, sedation, and recovery;
- ***clean***, disinfect, and process equipment;
- ***maintain quality control***.

Most endoscopy assistants are trained nurses, but technicians and nursing aides also have roles (e.g. in equipment processing). Large units need a variety of other staff, to handle reception, transport, reporting, and equipment management, including informatics.

Members of staff need places to store their clothes and valuables, and a break area for refreshments and meals.

Procedure reports

Usually, two reports are generated for each procedure—one by the nurses and one by the endoscopist.

Nurse's report

The nurse's report usually takes the form of a preprinted "flow sheet," with places to record all of the pre-procedure safety checks, vital signs, use of sedation/analgesia and other medications, monitoring of vital signs and patient responses, equipment and accessory usage, and image documentation. It concludes with a copy of the discharge instructions given to the patient.

Endoscopist's report

In many units, the endoscopist's report is written or dictated in the procedure rooms. In larger ones, there may need to be a separate area designed for that purpose.